DESCRIPTION OF THE LARVA OF *SEFRANIA BLEUSEI* PIC AND ASSIGNMENT OF *SEFRANIA SABULORUM* (BEAL) TO THE NEW GENUS *ARAPHONOTOS* BEAL AND KADEJ (COLEOPTERA: DERMESTIDAE)[1]

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ABSTRACT: We describe the mature larva of *Sefrania bleusei* Pic and establish the new genus *Araphonotos* Beal and Kadej for the reception of *S. sabulorum* (Beal). We argue the latter species is erroneously assigned to the genus *Sefrania*. Tables comparing *S. bleusei* and *A. sabulorum* indicate a generic distinction between the two. Also provided are important differences between *Araphonotos* and the type species of *Novelsis* (*Attagenus horni* Jayne), the genus to which *S. sabulorum* was initially assigned.

KEY WORDS: *Sefrania bleusei, Sefrania sabulorum, Araphonotos sabulorum, Novelsis sabulorum*, Dermestidae, Attagenini, new genus, new combination

Sefrania Pic (1899) included only *S. bleusei* until Háva (2004) transferred *Novelsis sabulorum* Beal (1984) to *Sefrania*. Háva provided no justification for the transfer other than his remark, "All general morphological differences of the both species are identical."

The genus *Novelsis* was described by T. L. Casey in 1900. Beal (1954) designated *Attagenus horni* Jayne, 1882, as the type of the genus. Nearctic Attagenini were revised by Beal in 1970. In it, he considered the genus *Novelsis* a polymorphic assemblage. In 1984, Beal described the adult male and larva of *N. sabulorum*, a sand dune inhabiting species. He assigned the species to *Novelsis* with some misgivings, stating, "The systematic position of this species needs further investigation."

Sefrania bleusei was originally described from Algeria. Its African distribution is now known to include Tunisia and Morocco (Háva, 2003). It has recently been introduced into Poland (Ruta et al., 2004). In 1997, it was observed for the first time in the facilities of the Department of Systematic Zoology, Adam M. Mickiewicz University, Poznań. Larvae and adults of *S. bleusei* were collected in Poznań, Collegium Maius, by Konwerski and Bunalski (3-II to 26-V-2000) in dry bones of fish and amphibians stored in boxes. Adult males were taken on window sills. The species was reported by Ruta et al. (2004) in cultivars of insects and in dried entomological collections. No studies have been made on the biology of the species.

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METHODS

All larval structures were observed using exuviae, of which we had about 30 specimens. Most morphological structures were observed in glycerin under phase contrast with a Nikon Eclipse E 600 microscope and figured using a drawing attachment. Drawing of the spiracle and the spiracular sclerite was made from a balsam-mounted slide of a larval cast using 975x magnification of a compound binocular microscope equipped with an ocular grid.

Eight adult specimens of *S. bleusei* were available for our study. Voucher specimens of adults and larval exuviae are deposited in the C. P. Gillette Museum of Arthropod Diversity at Colorado State University, Fort Collins, Colorado, U.S.A., in the University of Wroclaw (coll. of Department of Biodiversity and Evolutionary Taxonomy), and in the Academy of Agriculture in Poznań (coll. Department of Entomology), Wroclaw, Poland.

Special terms used

Antecostal suture. A thread-like suture near the anterior margin of nota 2 and 3 and the abdominal terga.

Acrotergite. That part of a tergum anterior to the antecostal suture.

Prostheca. A small, hyaline projection from the base of the medial side of the larval mandible of some Dermestidae including some Attagenini (Rees, 1943).

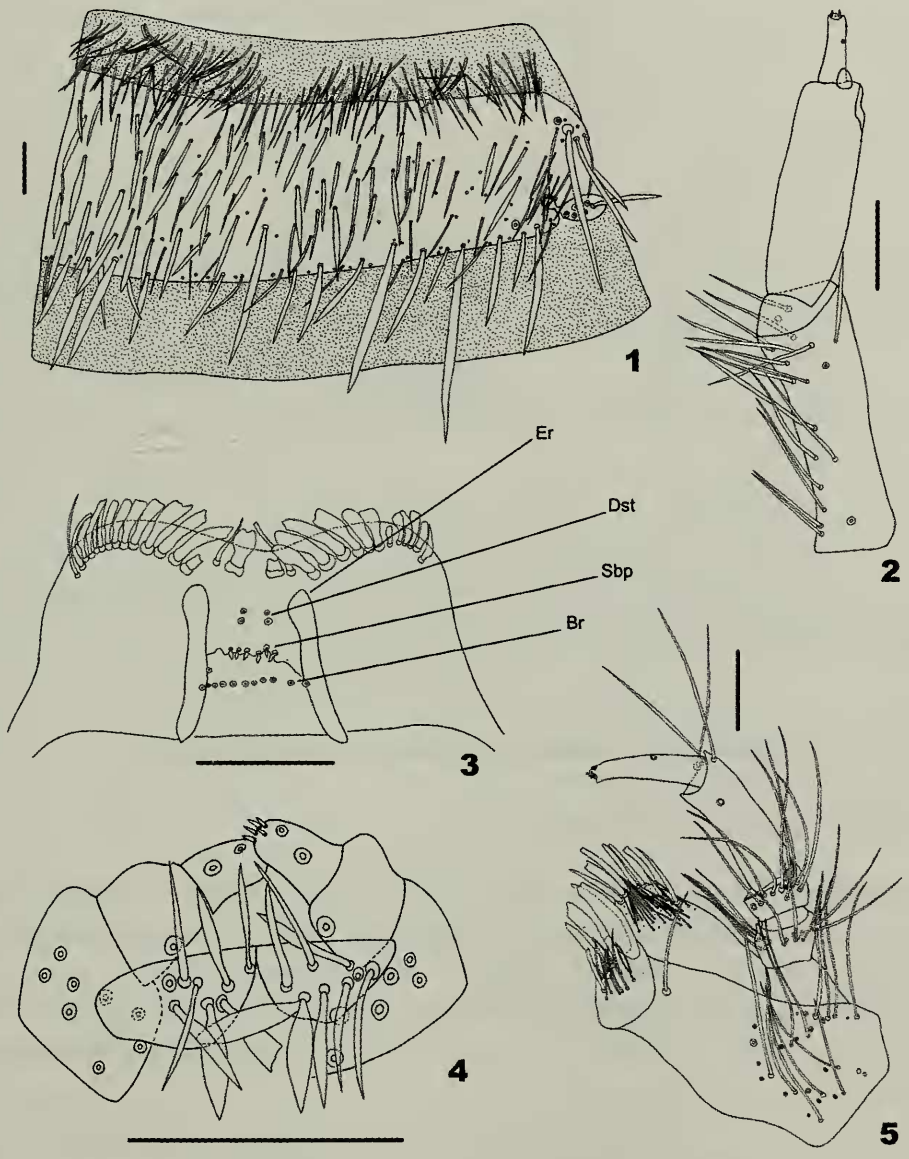
Tergite. That part of a tergum posterior to the antecostal suture.

SYSTEMATIC ENTOMOLOGY

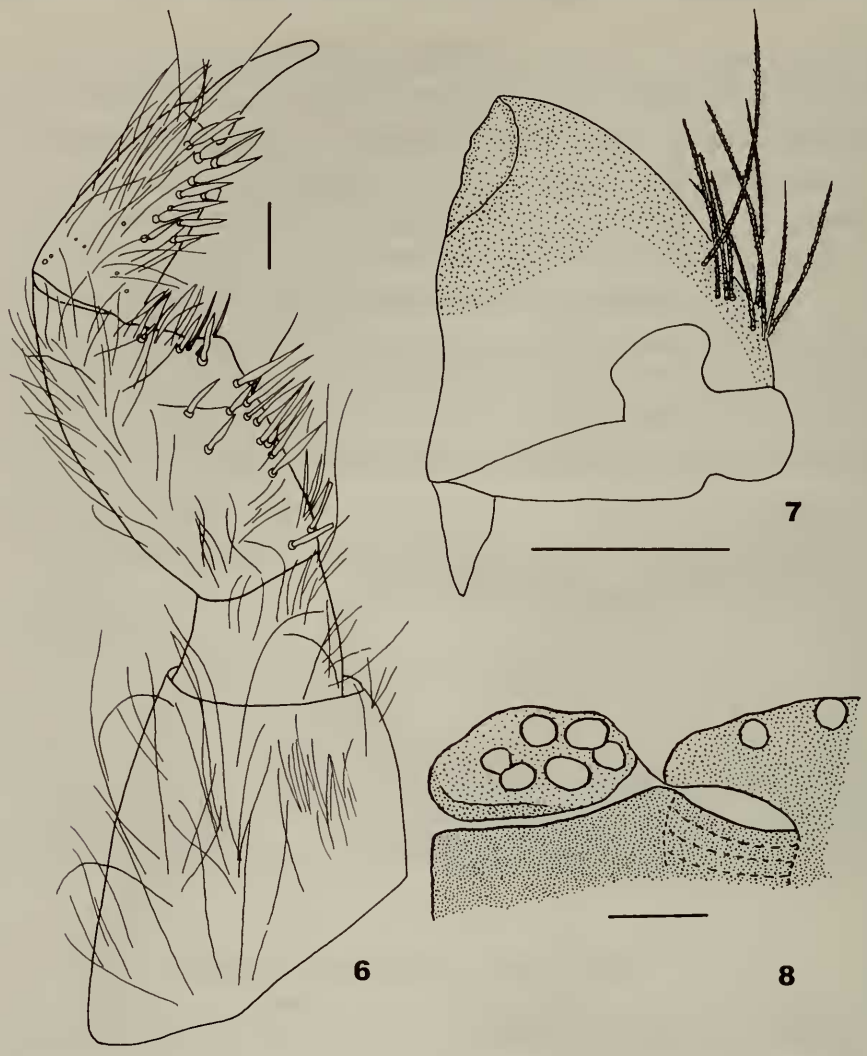
Sefrania bleusei Pic, 1899:29
Attagenus (Sefrania) bleusei Kocher, 1956:25
(Figs. 1-8)

Description: Mature larva. Dorsal and ventral surfaces of body covered with golden-brown setae. Longest setae of posterior margin of pronotum 1.3 times length of pronotum at midline; longest setae of lateral margin of pronotum 1.6 times length of pronotum at midline. Margins of setae smooth; larger setae with 4 ribs between margins; smaller setae with 2 or no discernable ribs between margins. Head with surface of frons and epicranial plates covered with narrowly ensiform setae about 1/3 length of frons and few very fine setae about as long as frons. Antenna as shown in Fig. 2; basal segment with numerous but variable number of setae; second segment with small apical sensorium on dorso-lateral side; sensorium appressed to base of segment 3. Epipharynx and labro-epipharyngeal margin (Fig. 3) with 11-14 sensory cups (Br) in proximal series; 6 sensory papillae (Sbp) in medial transverse series; 2 sensory cups (Dst) in distal transverse series; epipharyngeal rods (Er) as illustrated. Lateral margin of mandible with minute denticles over surface; prostheca not present (Fig. 7). Maxilla (Fig. 5) with first and second maxillary palp segments short bearing numerous setae; apices of galea and lacinia with strongly curved setae dorsally and numer-

ous fine setae ventrally. Labium as in Fig. 4. Abdominal terga (tergum 1 shown in Fig. 1) with acrotergite bearing numerous fine setae, longest about 1/3 length of tergite. Disc of tergite with numerous setae; few setae fine but most wider and narrowly lanceolate; longest setae of disc of tergite about 1/3 length of tergum; disc without row of erect setae. Numerous long and short setae along posterior margin of tergite; longest about 1-1/3 times length of tergite. Spiracular sclerite of terga (Fig. 8) not projecting beyond lateral margin of tergum; 4 to 8 lanceolate setae inserted in sclerite. Spiracle slit-like with lateral side close to spiracular sclerite. Sterna entirely covered with setae with stoutest and longest on posterior margins. Legs covered with numerous long, fine setae; some setae as long as 3/4 length of metathoracic tibia. Prothoracic leg (Fig. 6).



Figs. 1-5. Larval structures of *Sefrania bleusei*. 1. Right half of abdominal tergum 1. 2. Antenna. 3. Epipharyng and labro-epipharyngeal margin. 4. Labium. 5. Maxilla. (Er, epipharyngeal rod; Dst, distal epharyngeal sensilla; Sbp, subproximal epipharyngeal sensilla; Br, basal row of epipharyngeal sensilla. Lines = 0.1 mm.)



Figs. 6-8. Larval structures of *S. bleusei*. 6. Prothoracic leg; 7. Mandible; 8. Spiracle and spiracular sclerite of 2d abdominal tergum. Empty circles are sockets for insertion of setae. (Lines = 0.1 mm.)

Araphonotos sabulorum (Beal), new combination

Novelsis sabulorum Beal, 1984
Sefrania sabulorum: (Háva), 2004

Description: The adult male and the mature larva were described by Beal (1984). Females remain unknown. As a monotypic genus, the original description suffices for the description of the new genus *Araphonotos*.

Etymology: *Araphonotos* is a combination of 2 Greek words; *araphos,* seamless, and *notos,* back, referring to the lack of antecostal sutures on the notal and tergal segments of the larva.

DISCUSSION AND COMPARISONS

Based on what is known of larvae and adults within the Attagenini, the differences listed in the following 2 tables are of generic significance and warrant

removing *S. sabulorum* from the genus *Sefrania* and moving it to the new genus *Araphonotos*. There is a superficial dorsal similarity between adults of *A. sabulorum* and *S. bleusei*, yet when both adult and larval characters are considered, there is little doubt but that *A. sabulorum* does not belong to *Sefrania*. Probably the most convincing character arguing for separation of *S. bleusei* and *A. sabulorum* is the absence of antecostal sutures on the larval nota and terga of *A. sabulorum* and their presence on all other known Attagenini, including *Sefrania*.

Adult characters that we consider to be generically significant in view of characters found in other species of the Attagenini are the following:

(1) Profemora of *A. sabulorum* are stout, presumably adapted for a fossorial habitat. Profemora of *S. bleusei* are slender.
(2) The ratio of antennal segment 9 to segment 10 and segment 11 in *A. sabulorum* is 1:1.3:2.1. The ratio of length of segments 9 to segment 10 and segment 11 of the male antennal club in *S. bleusei* are 1:0.7:2.4.
(3) Segment 2 of protarsus of *A. sabulorum* is less than 2 times as long as segment 1 and only 2/13 as long as tibia. Segment 2 of protarsus of *S. bleusei* is 4 times as long as segment 1 and 2/5 as long as tibia;
(4) Protibia of *A. sabulorum* has long outer and somewhat shorter apical spines; the outer apical spine of the protibia extends to apex of tarsal segment 2. Tibiae of *S. bleusei* have apical spines subequal and extending very slightly beyond apex of tarsal segment 1.

The following are observed significant larval differences between *A. sabulorum* and *S. bleusei*.

(1) Nota 2 and 3 and all abdominal terga of *A. sabulorum* lack antecostal sutures. Nota 2 and 3 and all abdominal terga of *S. bleusei* have distinct antecostal sutures.
(2) *A. sabulorum* has numerous setae inserted on antennal segment 2. No setae are inserted on antennal segment 2 of *S. bleusei*.
(3) The spiracular sclerite of *A. sabulorum* is located almost entirely laterad of the lateral margin of the tergum. The spiracular sclerite of *S. bleusei* does not project beyond the lateral margin of the tergum (Fig. 8).
(4) 10 to 16 setae are inserted on the spiracular sclerite of *A. sabulorum*. At most, 8 setae are inserted on the spiracular sclerite of *S. bleusei*.
(5) Two pairs of longer stout setae on the ventral apex of the prothoracic tibia of *A. sabulorum* are 2/3 as long as pretarsal claw. Stout setae at the apex of tibia in *S. bleusei* are less than 1/2 as long as pretarsal claw. (In all significant respects, the meso- and metathoracic legs in *S. bleusei* are identical to the prothoracic leg.)

Although a general similarity of the adult body and antennae of *A. sabulorum* and *N. horni* suggests they are congeneric, larval differences shown in the table below clearly separate the two. Beal (1970) distinguished 6 groups of Nearctic Attagenini, each of which he considered generically distinct. Group I included the type species of *Attagenus*. Other than for Group I, he did not assign generic

names to the groups, not having access to larvae of the type species of some named and described Palearctic genera (*Telopes* and *Lanorus*). He placed *N. horni* and related species in his Group VI.

(1) *A. sabulorum* lacks antecostal sutures on all nota and terga. Antecostal sutures are clearly present on the nota and terga of *N. horni.*
(2) *A. sabulorum* has 2 distal sensory cups on the epipharynx. *N. horni* lacks distal sensory cups on the epipharynx. Within the species assigned to Group VI of *Novelsis*, as far as is known, only *N. horni* and other members lack distal sensory cups.
(3) 12 to 17 setae are inserted on antennal segment 2 of *A. sabulorum.* No setae are inserted on antennal segment 2 of *N. horni.*

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